

ABSTRACT

A first method for fabricating low-noise optical components for use in optical metrology systems includes shaping a glass substrate to obtain a desired shape and then coating the glass substrate with a reflective coating. A second method includes shaping a glass master die to a desired shape and then using the glass master to form a glass substrate to the desired shape. A third method includes diamond turning a substrate to a desired shape and then polishing the substrate to meet two surface conditions which in turn ensures that the scattered light is minimized and the metrology instrument's performance is greatly increased. These conditions relate to a measurement of encircled energy compared to an ideal diffraction limited component of the same focal length and diameter.